

## **1. INTRODUCTION**

### **1.1 Terms of Reference**

This Engineering Design Report (EDR) provides a basis for design and describes conceptual details of each element of the selected groundwater remedy as described in the Cleanup Action Plan (CAP) for the Lehigh Closed Cement Kiln Dust (CKD) Pile Site in Metaline Falls, Washington (Site). This document was prepared in accordance with the Consent Decree (CD – Pend Oreille County Superior Court No. 06-2-0034-6) between Lehigh Cement Company (Lehigh) and the Washington State Department of Ecology (Ecology) that took effect on 9 March 2006.

This EDR contains the information required by the Washington Administrative Code (WAC) 173-340-400(4)(a). Table 1-1 cross-references the WAC 173-340-400(4)(a) requirements with the location where the required information can be found in this EDR. This document, one of a series of deliverables required by the CD, has been prepared by GeoSyntec Consultants (GeoSyntec) on behalf of Lehigh for submittal to Ecology. The remaining deliverables required by the CD are listed later in this document.

### **1.2 Project Overview**

Groundwater currently contacts CKD within the Closed CKD Pile and then migrates to Sullivan Creek. As a result of the contact with CKD, the groundwater pH increases. The increase in groundwater pH causes certain naturally occurring metals in soil to dissolve into the groundwater. Lehigh and Ecology have entered into a Consent Decree that provides a method and a timeline to address the CKD-affected groundwater. The five primary requirements of Lehigh that are specified in the CD are:

1. Install, operate, and maintain a groundwater remedy consisting of a funnel-and-gate system with a treatment system, as described in the CD (and herein);

2. Install, operate, and maintain a groundwater gravity drain along the southern edge of the Closed CKD Pile, as described in the CD (and herein);
3. Monitor groundwater in accordance with a Compliance Monitoring Plan (CMP);
4. Provide for and maintain institutional controls; and
5. Operate and maintain the existing Closed CKD Pile cover and stormwater conveyance systems.

This EDR describes the conceptual details and design basis for each of the components related to the first four primary requirements of the CD listed above. The remediation system components described in the CD are collectively referred to as the Groundwater Remedy in this EDR. The existing cover and stormwater conveyance systems (fifth CD requirement) are described in documents provided previously to Ecology [Dames & Moore (D&M), 1995, 1996, 1997].

### 1.3 **Organization of the Engineering Design Report**

The remainder of this EDR is organized into the following sections:

- Section 2, *Background*, summarizes findings of the Site Remedial Investigation (RI) and Feasibility Study Technical Report (FSTR), as well as the regulatory history of the Site, and CD cleanup goals.
- Section 3, *Design Parameters*, describes key design parameters and variables that will be considered to design the elements of the Groundwater Remedy.
- Section 4, *Construction*, presents the anticipated construction sequence and contractor management

- Section 5, *Compliance Monitoring*, describes the protection, performance, and confirmation monitoring to be performed at the Site.
- Section 6, *Operation and Maintenance*, summarizes the activities to be performed after installation of the system.
- Section 7, *Schedule and Other Considerations*, presents the anticipated project schedule and limitations.
- Section 8, *Conclusions*, summarizes the benefits to implementing the Groundwater Remedy.

References, tables, figures, and appendices are included at the end of the document.